Division Of Industry Servicses
P. O. Box 2658
Madison, Wisconsin 53701
Scott Walker, Governor
Dave Ross, Secretary

MEMORANDUM

DATE: July 31, 2014

SUBJECT: Sensory Deprivation Chambers, Float Tanks, Float Pods and other similar devices.

FROM: Thomas Braun, Section Chief
Plumbing & Pool Program

Sensory Deprivation Tanks, Chambers, and Float Pods used for public use are regulated as swimming pools in Wisconsin. Sensory Deprivation Tanks, Chambers, and Float Pods are classified as limited purpose pools.

Chapter SPS 390 is promulgated under the authority of ss. 101.02 and 145.26, Stats., to regulate the design and construction, alteration or reconstruction of public swimming pools, water attractions and associated equipment in order to protect the health and safety of the public.

The following SPS 390 Administrative Code sections are relevant to this type of limited purpose pool.
The provisions of this chapter are not intended to prevent innovative designs for public swimming pools or water attractions. The department may issue an approval of an alternate design if the design complies with the intent of this chapter per SPS 390.04(3)(a).

SPS 390.02 Application. (1) APPLICABILITY. This chapter applies to the design and construction of all public swimming pools, water attractions and associated slides, and to the reconstruction or alteration of all public swimming pools, water attractions and associated slides.

SPS 390.03(23) "Pool" or "public swimming pool" has the meaning found in s. 145.26 (1), Stats. Public swimming pools include all of the following: (f) "Limited purpose pool" means a public swimming pool used for a purpose not otherwise defined, such as for apparatus swimming, underwater photography training or another special use by the public.

SPS 390.04 Plan review and approval. (1) REVIEW. (a) *Review requirements.* All designs under the scope of this chapter shall be submitted to the department for review and receive approval from the department prior to the start of construction in accordance with this section.

SPS 390.04(3) ALTERNATE PUBLIC SWIMMING POOL OR WATER ATTRACTION DESIGN REVIEW. (a) *Innovation.* The provisions of this chapter are not intended to prevent innovative designs for public swimming pools or water attractions. The department may issue an approval of an alternate design if the design complies with the intent of this chapter.

SPS 390.04(1)(f) *Limitations.* A conditional approval of a plan by the department shall not be construed as an assumption by the department of any responsibility for the design. The department does not hold itself liable for any defects in construction or for any damages that may result from the specific installation.

390.10(4) MATERIALS. (a) Pools and water attraction surfaces shall be impervious, easy to clean, inert and nontoxic to humans.

SPS 390.10(6) EQUIPMENT AND MATERIAL APPROVAL. All material and equipment used in the operation of a pool or water attraction within the scope of ANSI/NSF 50 shall conform to ANSI/NSF 50 or the equivalent.

390.10(7) VENTILATION. Ventilation shall be provided for all indoor pools and water attractions.
Note: See ch. SPS 364 for requirements for ventilation.
390.10(8) SLIP RESISTANCE. (a) The surfaces intended to provide patron footing within the pool enclosure or on the deck shall have a slip–resistant surface.
(b) The surfaces intended to provide patron footing include patron walkways, deck, stair treads, zero–depth entries and water levels less than 24 inches in depth.

390.10(9) CONSTRUCTION TOLERANCES. Construction tolerances May not exceed the applicable design dimensions beyond those Designated in Table 390.10.

Table 390.10
Construction Tolerances

Design Dimension	Construction Tolerance Permitted
Water depth in areas greater than 5′ deep	± 3″
Water Depth in areas up to 5′ deep	± 2″
Floor nozzle protrusion	± 1/8″
Stair treads and risers	± 1/2″[a]
Waterline for skimmer pools[b]	± 1/4″
Waterline for gutter and overflow trench pools	± 1/8″
Wall variance from vertical	± 3°

SPS 390.11(5) WALLS AND BULKHEADS. (a) *Basin walls.* 1. Basin walls shall be vertical.
2. Except for vanishing edge designs, basin walls shall extend above the highest water level at all times during operation.
3. Protruding corners shall be rounded so as to protect users from lacerations.

SPS 390.11(6) COLORS AND FINISHES. (a) All pool interiors shall be light in color, having a value of 6.5 or greater on the Munsell color– order system.
(b) All colors, patterns or demarcation lines may not negatively impact observer's visualization of bathers.
(c) All demarcation lines shall be of contrasting color to the pool interior.

SPS 390.11(7) FLOOR SLOPE. (a) Basin floors shall slope to drain.
(b) Basin floor slopes may not exceed 1:12 in water depths less than 5 feet.

SPS 390.11(8) TRANSITIONAL RADIUS. (a) Basin walls shall be joined to the floor with a tangent radius.
(b) For areas less than 5 feet in depth, the maximum radius between the floor and the basin wall shall be 6 inches.

SPS 390.12 Entries and exits, stairs, ladders, swimouts and benches. (1) ENTRIES AND EXITS. The minimum number, type and location of entries and exits shall be in accordance with Table 390.12–1. (**Other Basin Types** Contact the department)

SPS 390.12(3) STAIRS AND HANDRAILS. (a) *Stairways.* 1. Stairways shall be located only in areas of the basin with less than 5 feet of water depth.
2. Stairways shall be recessed so as not to protrude onto the basin floor.
3. All risers at the centerline shall have a maximum uniform height of 10 inches.
4. All treads shall have a minimum depth of 10 inches.
5. Stairways shall have a minimum width of 17 inches.
6. All treads shall have a minimum unobstructed surface area of 240 square inches.
7. Except as permitted in subd. 8., treads may not project beyond the face of the riser.
8. The maximum cantilevered coping at the deck level is one inch.
9. a. Except as required in subd. 9. b., stairways shall extend to the basin floor.
b. When stairways are located in a water depth over 4 feet, the lowest tread shall not be more than 4 feet below the deck.

11. The leading edge of all steps shall be distinguished by a color contrasting with the color of the steps and pool floor.
12. All step corners shall be rounded to a radius of 1/2 inch.

SPS 390.12(3)(b) *Handrails*. 1. Handrails shall be provided for all stairways and ramps.
2. Handrails shall be located between 30 and 34 inches above the ramp surface or nosing of the stair treads.
3. Handrails shall be a maximum of 8 feet apart at deck level.
4. Handrails shall return to the pool wall, guard or deck or shall be continuous to the handrail of an adjacent stair.
5. Handrails shall be made of corrosion resistant materials.
6. Handrails shall be securely anchored.
7. Handrails shall be installed so they cannot be removed without the use of tools.
8. The leading edge of stair tread−mounted handrails shall be located on the bottom tread.
9. The leading edge of entirely deck−mounted handrails shall be located so as to extend to within 3 inches of the vertical plane of the bottom riser.

SPS 390.13 Deck. (1) MINIMUM DECK. (a) Except as permitted in pars. (b) to (e), deck shall extend around the entire perimeter of all basins within the same enclosure.
(b) A water attractions shall be provided with deck immediately adjacent to a basin where patrons are allowed to walk.
(e) A therapy pool shall be provided with deck at all entry and exit points.

SPS 390.13(5) DECK SLOPES. (a) Except as permitted in subds. 2. and 3., interior decks shall be sloped so as to effectively drain to deck drains. 1. The maximum slope of interior decks shall be ½ inch per foot.

(c) Decks shall be constructed so that standing water shall be no deeper than 1/8 inch, 20 minutes after the cessation of the addition of water to the deck.

SPS 390.13 (6) DECKS, RAMPS AND WALKING AND STEP SURFACES. (a) 1. Decks, ramps walking and step surfaces shall be nontoxic.
2. Surfaces shall be slip resistant.
3. Surfaces shall be easily cleanable.
4. Surfaces shall not cause injury to user's feet under normal conditions.

390.13(9)(b) *Cleaning*. 1. One hose bibb shall be provided in each public swimming pool or water attraction equipment room.

390.14(1) (1) TURNOVER RATE. Circulation system equipment shall be designed to produce a turnover rate as specified in Table 390.14−1 or Table 390.14−2. (d Or as otherwise approved by the department.)

SPS 390.14(2) SEPARATE SYSTEMS. The circulation system shall be separate for each public swimming pool or water attraction.

SPS 390.14(4) ACCESSIBILITY. Circulation system equipment, including but not limited to pumps, skimmers, filters, gauges, meters and thermometers, shall be readily accessible for inspection, repair or replacement.

SPS 390.14(5) COMPONENT STANDARDS. Equipment that is within the scope of ANSI/NSF 50, circulation system components and related materials, shall be listed by an acceptable listing agency to meet ANSI/NSF 50 or equivalent.

SPS 390.14(6) INSTALLATION. (a) Pool equipment and related piping shall be supported to prevent damage from misalignment and settling.

(b) Pool equipment shall be installed in accordance with manufacturer's printed instructions and as specified in this chapter. If there is a conflict between the manufacturer's printed instructions and requirements of this chapter, the requirements of this chapter shall take precedence.

SPS 390.14(7) VELOCITIES AND PIPE SIZING REQUIREMENTS. (a) Velocities in the circulation system may not exceed:

1. Ten feet per second in discharge piping other than copper.
2. Eight feet per second in copper discharge piping.
3. Six feet per second in suction piping.
4. One and one−half feet per second through suction grates.

(b) Pool piping shall be sized to permit the rated flows for filtering and cleaning without exceeding the maximum design head of the pump.

SPS 390.14(8) GAUGES AND FLOW METERS. (a) A pump suction compound gauge shall be included in all circulation systems.

(b) A pump discharge gauge shall be located upstream of all throttling valves.

(c) A filter pressure gauge shall be included serving all filters in circulation systems.

(d) A flow meter capable of displaying flow during filtration shall be included in all circulation systems.

SPS 390.14(9) TESTING. Circulation system piping that is installed onsite shall be subjected to an induced static hydraulic pressure test at 25 pounds per square inch for at least one hour.

SPS 390.14(10) FILTERS. (a) *Design*. Filters shall be specified so that when operated and maintained in accordance with the manufacturer's printed instructions, the system provides the water clarity required in ch. DHS 172.

(b) *Maximum flow rate*. 1. Filters other than high rate sand filters shall be specified so that the maximum flow rate does not exceed those under ANSI/NSF 50.

2. High rate sand filters shall be specified so that the maximum flow rate does not exceed 15 gallons per minute per square foot or bed surface area.

(c) *Pressure release*. 1. Pressure−type filters shall be provided with a means to permit the release of internal pressure.

2. Filters incorporating an automatic air vent as the principal means of air release shall have a lid that provides a slow and safe release of pressure as a part of the design and have manual air release in addition to the automatic release.

3. Separation tanks used in conjunction with a filter tank shall comply with subd. 2.

4. The following statement shall be placed within the area of the air release so as to be clearly visible: "WARNING. DO NOT START UP THE SYSTEM AFTER MAINTENANCE WITHOUT FIRST OPENING THE AIR RELEASE AND PROPERLY ASSEMBLING THE FILTER AND SEPARATION TANK."

SPS 390.14(11) CIRCULATION PIPING. (a) Circulation piping shall be listed as meeting one of the following methods:

1. ANSI/NSF 50 by a listing agency acceptable to the department.
2. Chapter SPS 384.

(b) All circulation piping shall be listed to withhold a pressure 50 percent greater than the maximum design pressure.

SPS 390.14(12) PUMPS AND MOTORS. (a) All circulation pumps shall be capable of providing the design flow rates at one of the following minimum total dynamic heads:

1. Eighty feet for diatomaceous earth filters.
2. Seventy feet for sand or cartridge filters.
3. Fifty feet for vacuum filters.
4. A maximum total dynamic head value recommended by the filter manufacturer that allows the filter to function under all operating conditions.

(b) Pumps located below the waterline of a basin shall have isolation valves installed on suction and discharge lines.

(c) Pumps located above the waterline of the pool shall be self− priming or the system shall be designed to provide a means for priming.
(d) Intake strainers shall be provided upstream of all circulations pumps on pressure filter systems.
(e) Mechanical seals shall be corrosion resistant.
SPS 390.14(13) RETURN INLETS AND SUCTION OUTLETS. (a) Inlets and outlets shall be provided and arranged to produce a uniform circulation of water and maintain the distribution of sanitizer residual throughout the pool.
(b) *Return inlets*. 1. Return inlets shall be designed and installed so as to not constitute a hazard to the patron.
Note: An example of an inlet installation constituting a hazard to a patron is an inlet installed on a racing lane cross.
2. There shall be at least 2 inlets per circulation system.
3. Except as provided in subd. 4., the velocity of flow through any inlet orifice shall be in the range of 5 to 20 feet per second
Note: See the appendix for inlet velocity information.
4. For pools equipped with skimmers the velocity of flow through any inlet orifice shall be in the range of 10 to 20 feet per second.
5. Except for leisure rivers, the minimum number of return inlets shall be based on at least one additional inlet per 300 square feet of pool surface area or fraction thereof.
6. There shall be at least one wall return inlet for each 10 feet of stairway width, recessed bench length or swimout length or width or fraction thereof.
7. Bottom return inlets shall be flush with the basin floor.
8. Bottom return inlets shall be considered to have an area of influence of a radius of 10 feet.
Note: See the appendix for further explanatory material.
9. Wall return inlets may not extend more than one inch into a basin.
10. Except for leisure rivers, there shall be a wall return inlet within 5 feet of each corner of a basin wall.
(c) *Suction outlets*. 1. Suction system flow through main drains shall be designed to accommodate 100 percent of the circulation flow rate in accordance with all of the following:
a. All basins shall be provided with a suction outlet in the lowest point of the basin in the floor or the wall.
Note: For main drains installed in diving wells, see Table 390.06−1 b. Where 2 or more drains connect within the circulation system, all drains minus any one in the set shall be designed to collectively convey 100 percent of the circulation flow rate.
c. The distance between the bottom of the suction outlet grate and the opening of the suction pipe shall equal or exceed at least 1.5 times the inside diameter of the suction pipe.
2. Suction outlet grates shall comply with at least one of the following requirements:
a. A single grate having at least one dimension of length, width, diagonal or diameter that is at least 36 inches.
b. Two or more grates of any size separated from other suction outlets by at least 3 feet.
3. Suction systems shall be designed so that the maximum flow rates are not exceeded under operating conditions.
4. Suction grates and covers shall be listed as conforming to ASME/ANSI A112.19.8.
5. The maximum opening of any suction grate shall prevent the passage of a ½−inch sphere.
6. a. Barriers shall be provided on all wave pool caisson walls.
b. Openings in caisson barriers shall prevent the passage of a 4−inch sphere.
7. Vacuum fittings are not permitted within public swimming pools or water attractions.
(d) *Surface skimming systems*. 1. Surface skimming systems shall be included in the design of and installed to serve all basins.
2. Surface skimming systems shall be designed and constructed to skim the basin surface when the water level is maintained within the operational parameters of the system's rim or weir device.
3. Skimmers shall be located so as to maintain effective skimming action.
4. Skimmer covers located on a walking surface shall be
designed and installed to comply with all of the following requirements:
a. The skimmer cover shall be appropriately seated.

b. The skimmer cover shall be slip resistant.
c. The skimmer cover shall be sufficiently strong so as to withstand normal use.
d. The skimmer cover may not create a tripping hazard.
5. Equalizer lines shall have an anti−entrapment cover or other entrapment protection in accordance with ASME/ANSI A112.19 when suction fittings are located in the wall of a basin.
6. Where automatic skimming devices are used as the sole overflow system, at least one surface skimming device shall be provided for each 500 square feet or fraction thereof of water surface area.
7. Circulation systems shall be designed to carry 100 percent of the rated circulation volume through the skimmers.
8. The flow rate through automatic skimmers shall be no less than 3 gallons per minute per inch of skimmer weir width.
Note: The maximum flow rate through skimmers is determined by the ANSI/NSF 50 rating.
9. Acceptable options for surface skimming systems shall be in accordance with Table 390.14−3. (Other As approved by the department)

SPS 390.16 Mechanical systems. (1) ELECTRICAL. Electrical components shall comply with the requirements of ch. SPS 316.
(2) WATER HEATERS. (a) Water heating equipment shall comply with chs. SPS 364 and 365.
(b) A thermometer accurate to within plus or minus 2oF of the operating range shall be installed in the circulation piping.
(c) The thermometer required in par. (b) shall be accessible for reading.
(d) The use of a toxic solution, such as, but not limited to, heat transfer fluid in a single−wall heat exchanger, is prohibited.
(e) Water heaters and hot water storage tanks shall be equipped with temperature and pressure relief valves in accordance with ch. SPS 384.

SPS 390.16(3) ILLUMINATION. (a) Artificial lighting shall be provided so that all areas of the pool, including the bottom, shall be visible when the pool or water attraction is used during periods of low illumination.
(c) For indoor facilities, overhead lighting shall provide a minimum of 10 footcandles at the water surface and on the deck.
(d) 1. Except as permitted in subd. 2., underwater lighting shall provide a minimum of ½−watt incandescent light per square foot of water surface area or equivalent.
2. If overhead lighting provides a minimum of 15 footcandles illumination at the water surface, no underwater lighting is required.

SPS 390.16(4) WATER SUPPLY. (a) *Water quality*. The water supply for all public swimming pools and water attractions shall meet the water quality requirements as listed in ch. SPS 382, Table 382.70−1.
Note: Refer to Appendix A−390.20 (12) for pertinent sections of ch. SPS 382, Table 382.70−1.
(b) *Cross connection control*. Protection of the potable water supply shall comply with s. SPS 382.41.
(c) *Makeup water quality*. Makeup water to maintain the water level in all public swimming pools and water attractions and water used as a vehicle for disinfectants or other pool chemicals, for pump priming or for other such additions, shall meet the requirements listed in ch. SPS 382, Table 382.70−1.

SPS 390.16(5) WASTEWATER DISPOSAL. Wastewater discharges shall be in accordance with ss. SPS 382.38 Table 382.38−1 and 382.33.
Note: See appendix for a reprint of Table 382.38−1.

SPS 390.16(6) EQUIPMENT ROOM. (a) An equipment room or equipment enclosure shall be provided to serve all public swimming pools and water attractions.
1. An equipment room shall be ventilated in accordance with ch. SPS 364.
2. An equipment room shall be drained.
3. An equipment room shall be accessible for operation and maintenance of equipment.

SPS 390.17 Sanitizing equipment. (1) EQUIPMENT STANDARDS. (a) Sanitizing equipment shall be certified to comply with the requirements of NSF/ANSI 50.
(b) A chemical system that provides the residual required by ch. DHS 172 shall be installed when an alternative means of disinfection is proposed.
Note: Alternative disinfection systems include ultraviolet light, ozone and electrolytic chlorine generation, but are not limited to those systems.
(c) Sanitizing equipment shall be capable of introducing a sufficient quantity of a U.S. EPA–approved sanitizer for normal operating procedures.
Note: See ch. DHS 172 for disinfectant concentration and efficacy requirements.
(d) Sanitizing equipment shall be certified by a nationally recognized testing laboratory.
(2) SANITIZING EQUIPMENT. (a) Skimmer baskets may not be used as chemical feeders.
(b) An automatic controller for controlling the sanitizing equipment shall be installed on all public swimming pools and water attractions.
(c) The automatic controller shall include a flow sensor installed so that the chemical feed pump will not operate without a return flow to disburse the chemical.
(d) The automatic controller shall be electrically interlocked with the circulation pump control circuit.
Note: Pool operation requirements are found in ch. DHS 172, Wis. Adm. Code.
(e) The automatic controller and circulation pump shall have separate disconnect switches.

SPS 390.18(2) DEPTH MARKERS. (a) Depth markers shall be installed on all public swimming pools and water attractions that incorporate a water depth over 6 inches.

(d)2. Depth markers shall be plainly and conspicuously installed at all of the following locations:
a. On the vertical basin wall except where no portion of the basin wall is visible and above the waterline.
b. On the top of the coping or edge of the deck next to the basin.
Note: Additional depth markings may also be indicated in metric.
(e) When additional depth markers are indicated in metric, “meters” shall be abbreviated as “M.”
(f) All water depths indicated on depth markers shall be the depth at the location of the depth marker.
(g) All depth markers installed on vertical basin walls shall be located so as to be read from the waterside.
(h) Depth markers installed on decks shall be located no greater than 18 inches from the basin edge and positioned so as to be read while standing on the deck facing the water along the affected perimeter.
(i) All depth markers installed on decks shall be of slip resistant materials.
(j) The minimum height of depth marker characters shall be 4 inches. Characters shall be clearly visible and of permanent contrasting color to the background on which applied.
(k) Depth markers for water deeper than 5 feet shall indicate the maximum basin depth.

SPS 390.18(3) WARNING MARKERS. (a) Pools or water attractions having water depths of 5 feet or less shall be provided with diving prohibition markers located on the deck at intervals of no more than 25 feet.
(b) Diving prohibition markers shall be printed with the text, “No Diving.”
(c) The “No Diving” text shall be at least 4 inches in height.
(d) Diving prohibition markers shall include the international “No Diving” symbol.
(e) “No Diving” text and the “No Diving” symbol shall be clearly visible and of a contrasting color to that of the marker background.

SPS 390.19 Toilet room and sanitary facilities.
(1) GENERAL REQUIREMENTS. (a) Toilet and handwash facilities, and public drinking fountains shall be located so to be accessible by a length of paved walking surface no greater than 300 feet from the nearest rim of the most distant public swimming pool or water attraction.
(b) Showers and dressing facilities shall be provided and located on the premises and accessible by a length of paved walking surface.
Note: All applicable building requirements of chs. SPS 361 to 366 shall apply to the construction of bathhouses.

(c) 1. The floors of toilet rooms and dressing areas serving public swimming pools or water attractions shall have a smooth, hard, nonabsorbent, slip–resistant surface.
2. A smooth, hard, nonabsorbent surface shall extend upward on the walls at least 6 inches.
3. Junctions between walls and floors shall be coved.
4. When floor drains are installed, drain openings shall be ¼ inch or less in width or diameter.

SPS 390.19(2) DRAINAGE OF COVERED AREAS. (a) Floor drains shall be installed in toilet rooms and locker rooms where sanitary fixtures are located and where the room door is adjacent to the deck or adjacent to the impervious walkway draining to the deck.
(b) Floor drain openings shall be ¼ inch or less in width or diameter.
(c) Floors shall be pitched to drain.
(3) WALLS. Toilet room and locker room walls shall have a smooth, hard, nonabsorbent surface to a height of at least 4 feet above the floor.

SPS 390.19(5) REQUIRED NUMBER OF SANITARY FIXTURES. (a) The required minimum number of toilets, lavatories and showers shall be provided in accordance with Table 390.19.
(b) 1. Except as provided in subd. 2., the minimum number of drinking fountains shall be provided adjacent to the required deck in accordance with Table 390.19.
SPS 390.19(6) DIAPER CHANGING STATION. (a) Except as permitted in par. (b), all toilet rooms providing the required sanitary fixtures shall be equipped with a diaper changing station.
(b) Diaper changing stations are not required in toilet rooms exclusively serving therapy pools.

SPS 302.68 Public swimming pool and water attraction plan review and inspection fees.
(1) Plan examination and inspection fees for public swimming pools, water attractions and associated slides shall accompany plans and specifications when submitted to the department for review. If the department determines, upon review of the plans, that inadequate fees were received, the necessary additional fees shall be received by the department prior to plan review and determination.
(2) Except as provided in sub. (3), plan examination and inspection fees for the construction or modification of public swimming pools, water attractions and associated slides shall be as listed in Tables 302.68–1 and 302.68–2. (Table 302.68-2, $900.00, or Table 302.64-, $1500.00).

The Division of Industry Services reserves the right to require changes or additions should conditions arise making them necessary for code compliance. As per state stats 101.12(2), nothing in this review shall relieve the designer of the responsibility for designing a safe building, structure, or component.

Inquiries concerning this correspondence may be made to the Dept. of Safety and Professional Services 1400 E. Washington Ave. Madison, WI 53703, phone 608.267.9421, or email DspsSbPoolTech@wisconsin.gov

Sincerely,

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